

COURSE: FISH NUTRITION (FIS 302)

Unit: 2

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1. Nutrient sources and practices consideration in feeding

Definition of nutrient. This is the absorbable substance released as a result of digestion of food or feed by an organism.

Examples are: protein, carbohydrate, fats and oil, vitamin and mineral salts.

Sources are the feed ingredient containing the nutrients. Examples are:

Ingredient	Nutrient
Fish meal	Protein
Soybean meal	Protein
Groundnut cake	Protein
Cotton seed cake	Protein
Maize	Carbohydrate
Sorghum	Carbohydrate
Millet	Carbohydrate
Vegetable oil	Fat and oils
Pork lard	Fat and oils

Protein sources are ingredients with protein content from 20% and above.

Protein is classified into 2 parts based on sources. They are animal source and plant source.

2. Feed formulation

Definition. Calculation of different ingredients to be mixed together to form a balance ration.

Requirements of feed formulation.

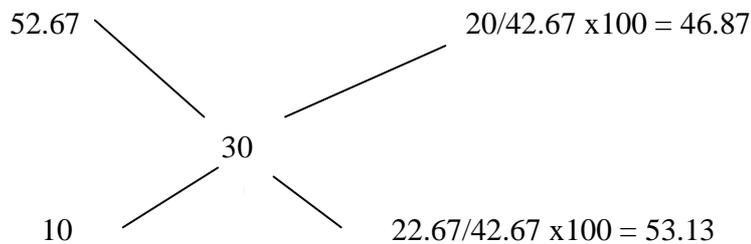
1. The nutrient requirement of the fish should be known.
2. The nutrient composition of the ingredients should be known.
3. Cost of ingredient should be known
4. The ingredients should be available and
5. The minimum and maximum levels of inclusion of ingredients should be known.

Example 2

Formulate a ration containing 30% CP using fish meal (72%CP), soybean meal (43%CP) in the ratio 1:2. Use maize (10%CP) as energy source..

(Ratios are assigned when using more than one source of nutrient).

Fish meal 72% CP	Ratio 1	$1 \times 72 = 72$
Soybean meal 43%CP	Ratio 2	$2 \times 43 = 86$
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	3	$158/3 = 52.67$



Protein sources contribution by weight = 46.87

Individual source = $46.87/3 = 15.62$

Fish meal = $15.62 \times 1 = 15.62$

Soybean meal = $15.62 \times 2 = 31.24$

Maize = 53.13

Contribution by protein:

Fish meal = $15.62/100 \times 72 = 11.25$

Soybean meal = $31.24 \times 43 = 13.43$

Maize = $53.13/100 \times 10 = 5.31$

Total =

 29.99 or 30.00%.

3. Different methods of feeding.

1. Point/spot feeding.

This is when feed is dispensed to fish at a point or spot in the culture system.

Advantages and disadvantages

2, Broadcast feeding.

This is when feed is dispensed to fish by spreading or broadcasting in the culture system.

Advantages and disadvantages.

3.Mechanical feeding

Feeding equipments

Stationary feeding equipment e..g. Demand feeder

Mobile feeding equipment e.g. Automatic feeder.

Mode of feeding

1. Feeding at percentage body weight.

2. Feeding to satiation.